

In re AKEMAKOU
09/700,877

REMARKS

The Examiner is thanked for the Official Action dated July 31, 2002 and the indication of allowable subject matter. This amendment and remarks to follow are fully responsive thereto.

Claims 1 and 2 were rejected under 35 U.S.C. 103(a) as being unpatentable over Nondahl (USP 4,405,873) in view of Tanaka (USP 4,727,273). Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Nondahl '873 (Applicant has assumed a typo in the Official Action, ¶ 5) in view of Tanaka '273 and Hiroshi (JP 58-063059). These rejections are respectfully traversed in view of the above amendment and the following comments.

Tanaka '273 discloses a sub-assembly inside a rotor where the sub-assembly combines at least one magnet of the first (rare earth) group with at least one magnet of the second (ferrite) group. In Tanaka '273, rare earth and ferrite magnets are combined in the circumferential direction only.

Applicant has amended claim 1 to recite an arrangement for a rotor including an "assembly combining at least one magnet of the first (earth) group with a magnet of the second (ferrite) group arranged in superimposed relationship in a generally radial direction and wherein, at least one of the magnets being disposed radially so as to generate an orthoradial magnetic flux".

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Due to the expense of rare earth magnets as disclosed by Tanaka (see col. 1, line 30), one of skill in the art would not modify Nondahl '873 in view of Tanaka '273 to achieve the arrangement of amended claim 1. Tanaka teaches that rare earth magnets are very expensive (col. 1, line 30) and, in Tanaka '273, rare earth and ferrite magnets are combined only in the circumferential direction.

Therefore, it is clear that the prior art combination suggested by the Examiner fails to render obvious the claimed invention because the combination fails to set for the each claim element and structure.

The Examiner has indicated that claims 4-8 contain allowable subject matter because the prior art does not teach the construction of an electric machine wherein each sub-assembly comprises a magnet containing rare earths interposed in a radial direction, between two ferrite magnets.

Applicant has added new claims 9-17 which directly correspond to allowable claim 4 (new claim 9) and claim 5 (new claim 14) with corresponding dependent claims.


It is respectfully submitted that claims 1-17 define the invention over the prior art and that the claims be considered allowable and notice to that effect is earnestly solicited. Should the Examiner believe further discussion regarding the above claim language would expedite

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prosecution, he is invited to contact the undersigned at the number listed below.

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In re application of: AKEMAKOU

Serial No.: 09/700,877

Examiner: CUEVAS, P.

Filed: November 20, 2000

Group Art Unit: 2834

Title: ROTATING MACHINE COMPRISING MAGNETS WITH DIFFERENT
COMPOSITIONS

APPENDIX SHOWING AMENDMENTS

IN THE CLAIMS

Please amend claim 1 as follows.

1. A rotary electrical machine, comprising a stator (S), a rotor (R), an airgap (E) between the stator (S) and the rotor (R), and permanent magnets incorporated in at least one of the rotor and the stator, wherein the magnets constitute at least a first group of magnets containing rare earths and a second group consisting of ferrite magnets, wherein a plurality of sub-assemblies (720, 721-731, 730, 732-800, 810 ...) is provided, each sub-assembly combining at least one magnet of the first group with a magnet of the second group arranged in superimposed relationship in a generally radial direction and wherein, at least one of [the] said magnets being disposed radially so as to generate an orthoradial magnetic flux.

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Please add new claims 9-17 as follows.

9. A rotary electrical machine, comprising a stator (S), a rotor (R), an airgap (E) between the stator (S) and the rotor (R), and permanent magnets incorporated in at least one of the rotor and the stator, wherein the magnets constitute at least a first group of magnets containing rare earths and a second group consisting of ferrite magnets, wherein a plurality of sub-assemblies (720, 721-731, 730, 732-800, 810 ...) is provided inside the rotor, each sub-assembly combining at least one magnet of the first group with at least one magnet of the second group, at least one of the said magnets being oriented radially so as to generate an orthoradial magnetic flux, and

wherein each sub-assembly comprises a magnet containing rare earths (730) interposed, in a radial direction, between two ferrite magnets (731, 732).

10. An electrical machine according to Claim 9, wherein each sub-assembly comprises a magnet containing rare earths (910) situated close to the airgap (E) and in superimposed relationship in a generally radial direction with a ferrite magnet (900a, 900b) of the same thickness as the rare earth magnet, the said ferrite magnet including indexing means defined by at least one of a chamfered portion (9000a) and a notch (9000b).

11. An electrical machine according to Claim 10, wherein the first group consisting of rare earth magnets is of smaller size than the second group consisting of ferrite magnets.

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12. An electrical machine according to Claim 11, wherein the sub-assemblies are mounted in the rotor (R).

13. An electrical machine according to Claim 12, wherein each sub-assembly consists of a magnet of the first group (721, 810 ...) situated close to the surface of the rotor (R) and arranged in superimposed relationship in a generally radial direction with a ferrite magnet (720, 800) situated close to the axis of rotation of the rotor.

14. A rotary electrical machine, comprising a stator (S), a rotor (R), an airgap (E) between the stator (S) and the rotor (R), and permanent magnets incorporated in at least one of the rotor and the stator, wherein the magnets constitute at least a first group of magnets containing rare earths and a second group consisting of ferrite magnets, wherein a plurality of sub-assemblies (720, 721-731, 730, 732-800, 810 ...) is provided inside the rotor, each sub-assembly combining at least one magnet of the first group with at least one magnet of the second group, at least one of the said magnets being oriented radially so as to generate an orthoradial magnetic flux,

wherein each sub-assembly comprises a magnet containing rare earths (721, 810) situated close to the airgap (E), arranged in superimposed relationship in a generally radial direction with a ferrite magnet (720, 800), and

wherein each sub-assembly comprises a magnet containing rare earths (910) situated close to the airgap (E) and in superimposed relationship in a generally radial direction with a

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ferrite magnet (900a, 900b) of the same thickness as the rare earth magnet, the said ferrite magnet including indexing means defined by at least one of a chamfered portion (9000a) and a notch (9000b).

15. An electrical machine according to Claim 14, wherein the first group consisting of rare earth magnets is of smaller size than the second group consisting of ferrite magnets.

16. An electrical machine according to Claim 15, wherein the sub-assemblies are mounted in the rotor (R).

17. An electrical machine according to Claim 16, wherein each sub-assembly consists of a magnet of the first group (721, 810 ...) situated close to the surface of the rotor (R) and arranged in superimposed relationship in a generally radial direction with a ferrite magnet (720, 800) situated close to the axis of rotation of the rotor.